Telling Our Story Using Data

Presented to: TCUF 2014 Annual Conference
October 3, 2014

Best Management Practices for Condition Assessment and Project Planning
Learning Objectives

- Facilities history of Alamo Colleges
- Role of Facility Condition Assessment (FCA) in understanding “What do we own and what shape is it in?”
- Role of FCA in forecasting PM budgets
- Conflict between named Facility Condition Index (FCI) projects and “wants”
- Overcoming expectation of “Industry Standard” perception by leadership
- Energy Assessment Opportunities
- Challenges with communicating nuances of data to non-technical consumers
- Importance of keeping data fresh
- Planning your programs
- Success and failures – lesson’s learned

Space: How much you have, what shape is it in and how is it used?
Alamo Colleges

- Five (5) major campuses
- 210 Buildings
- 4,988,137 sf
- $995,272,000 Replacement Cost
- 200+ Facilities Employees
- 62,377 students
- 942 acres
- $315MM Annual Budget
- $36MM Maintenance and Operations (includes utilities)

Serving the greater San Antonio area.
Start With Assessment

- Know How Much You Own
- Know The Condition
- Know Before You Go

“Report Card” for your facilities
Assessment Methodology

- Methodology
  - Professional Architects
  - Professional Engineers
  - Multi-Discipline
- Data Collection Options
  - Verbal communication, anecdotal
  - Excel
  - Relative scoring (Ie., 1-5)
  - Assessment software-Typical For Gov’t Entities
    - Macro level detail
    - Micro level detail

“Garbage in = Garbage out”
Assessment Methodology

- Typical Productivity

*Productivity Varies Widely According To Level Of Assessment Detail*
Terms:
- Requirements
- Replacement Value
- Facility Condition Index (FCI)

\[ FCI = \text{Facility Condition Index} \]

FCI is an index of current facility condition based on the cost of deferred maintenance requirements relative to the building replacement value.

\[ FCI = \frac{\text{requirement costs}}{\text{building replacement value}} \]

FCI is the center of your argument for funding.
FCI “Industry Standard”

- 50% Rule
- Intrinsic Value
- Best-In-Class Consideration
- 15% Goal

Standards do not exist.
Examples:
- Building By Building

FCI is the center of your argument for funding
Examples:
- Campus By Campus
Examples:
- College-Wide

Campus FCI
FCI Deeper Dive

- Examples:
  - “Top 20” FCI losers

FCI is the center of your argument for funding
FCI Deeper Dive

Examples:
- Age Distribution

<table>
<thead>
<tr>
<th>Age Range of Buildings</th>
<th>Number of Buildings</th>
<th>GSF in Age Range</th>
<th>% of Total (GSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater than 50 Years Old</td>
<td>33</td>
<td>965,454</td>
<td>20%</td>
</tr>
<tr>
<td>Between 25 and 50 Years Old</td>
<td>30</td>
<td>852,160</td>
<td>17%</td>
</tr>
<tr>
<td>Between 10 and 25 Years Old</td>
<td>49</td>
<td>916,763</td>
<td>19%</td>
</tr>
<tr>
<td>Less Than 10 Years Old</td>
<td>98</td>
<td>2,214,544</td>
<td>45%</td>
</tr>
<tr>
<td>Total</td>
<td>210</td>
<td>4,948,921</td>
<td>100%</td>
</tr>
</tbody>
</table>

FCI is the center of your argument for funding
Examples:
- Need Type

PREVENTIVE MAINTENANCE: Requirements by Category

- Beyond Useful Life: 95%
- Modernization: 2%
- Energy: 1%
- Integrity: 2%

<table>
<thead>
<tr>
<th>Category</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beyond Useful Life</td>
<td>$167,048,203</td>
</tr>
<tr>
<td>Energy</td>
<td>$1,729,538</td>
</tr>
<tr>
<td>Reliability</td>
<td>$238,605</td>
</tr>
<tr>
<td>Modernization</td>
<td>$3,773,739</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$32,005</td>
</tr>
<tr>
<td>Appearance</td>
<td>$35,223</td>
</tr>
<tr>
<td>Integrity</td>
<td>$3,652,075</td>
</tr>
<tr>
<td>Life Safety</td>
<td>$5,567</td>
</tr>
<tr>
<td>Accessibility</td>
<td>$4,494</td>
</tr>
<tr>
<td>Total</td>
<td>$176,519,449</td>
</tr>
</tbody>
</table>

$177 MM Total Identified Requirements
### Examples:
- **Need Type**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Estimated Cost</th>
<th>Linked System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Windows Renewal</td>
<td>$238,176.00</td>
<td>B2020 - Exterior Windows - Aluminum Windows</td>
</tr>
<tr>
<td>Door Assembly - 6 x 7 Storefront Renewal</td>
<td>$32,965.00</td>
<td>B2030 - Exterior Doors - Door Assembly - 6 x 7 Storefront</td>
</tr>
<tr>
<td>Restroom Accessories - Economy Renewal</td>
<td>$77,872.00</td>
<td>C1030 - Fittings - Restroom Accessories - Economy</td>
</tr>
<tr>
<td>Ceramic Tile Renewal</td>
<td>$136,549.00</td>
<td>C3010 - Wall Finishes - Ceramic Tile</td>
</tr>
<tr>
<td>Ceramic Tile-Corridor Renewal</td>
<td>$106,063.00</td>
<td>C3010 - Wall Finishes - Ceramic Tile-Corridor</td>
</tr>
<tr>
<td>Painted Finish - Average (1 Coat Prime - 2 Coats Finish) Renewal</td>
<td>$158,784.00</td>
<td>C3010 - Wall Finishes - Painted Finish - Average (1 Coat Prime - 2 Coats Finish)</td>
</tr>
<tr>
<td>Sound Attenuation Panels Renewal</td>
<td>$16,170.00</td>
<td>C3010 - Wall Finishes - Sound Attenuation Panels</td>
</tr>
<tr>
<td>Carpentry - Broadloom - Economy Renewal</td>
<td>$74,993.00</td>
<td>C3020 - Floor Finishes - Carpentry - Broadloom - Economy</td>
</tr>
<tr>
<td>Carpentry - Tile Renewal</td>
<td>$165,435.00</td>
<td>C3020 - Floor Finishes - Carpentry - Tile</td>
</tr>
<tr>
<td>Ceramic Tile Renewal</td>
<td>$66,255.00</td>
<td>C3020 - Floor Finishes - Ceramic Tile</td>
</tr>
<tr>
<td>Concrete - Sealed Renewal</td>
<td>$4,506.00</td>
<td>C3020 - Floor Finishes - Concrete - Sealed</td>
</tr>
<tr>
<td>VAT - Average (Asbestos Tile) Renewal</td>
<td>$8,028.00</td>
<td>C3020 - Floor Finishes - VAT - Average (Asbestos Tile)</td>
</tr>
<tr>
<td>VCT - Average Renewal</td>
<td>$85,239.00</td>
<td>C3020 - Floor Finishes - VCT - Average</td>
</tr>
<tr>
<td>GWB Taped and Finished Renewal</td>
<td>$32,079.00</td>
<td>C3030 - Ceiling Finishes - GWB Taped and Finished</td>
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<tr>
<td>Hydraulic Passenger Elev - Economy Renewal</td>
<td>$355,372.00</td>
<td>D1010 - Elevators and Lifts - Hydraulic Passenger Elev - Economy</td>
</tr>
<tr>
<td>Elevator Cab Finishes - Passenger Renewal</td>
<td>$42,048.00</td>
<td>D1011 - Passenger Elevators - Elevator Cab Finishes - Passenger</td>
</tr>
<tr>
<td>Custodial/Utility Sinks - SF Renewal</td>
<td>$38,956.00</td>
<td>D2010 - Plumbing Fixtures - Custodial/Utility Sinks - SF</td>
</tr>
<tr>
<td>Kitchenette - Cabinet, Counter and Sink Renewal</td>
<td>$53,293.00</td>
<td>D2010 - Plumbing Fixtures - Kitchenette - Cabinet, Counter and Sink</td>
</tr>
<tr>
<td>Restroom Fixtures 7 - Std Density - Avg Qual Renewal</td>
<td>$276,244.00</td>
<td>D2010 - Plumbing Fixtures - Restroom Fixtures 7 - Std Density - Avg Qual</td>
</tr>
<tr>
<td>Water Dist Complete - Average Renewal</td>
<td>$308,286.00</td>
<td>D2020 - Domestic Water Distribution - Water Dist Complete - Average</td>
</tr>
<tr>
<td>Fan Coil System - Cabinet - Heating Only - 2 Pipe Renewal</td>
<td>$321,929.00</td>
<td>D3040 - Distribution Systems - Fan Coil System - Cabinet - Heating Only - 2 Pipe</td>
</tr>
<tr>
<td>Four Pipe Distribution System w/Pump Renewal</td>
<td>$1,588,787.00</td>
<td>D3040 - Distribution Systems - Four Pipe Distribution System w/Pump</td>
</tr>
<tr>
<td>Heat Exchanger - Steam/HW - Shell and Tube Renewal</td>
<td>$183,891.00</td>
<td>D3040 - Distribution Systems - Heat Exchanger - Steam/HW - Shell and Tube</td>
</tr>
<tr>
<td>Steam Piping and Condensate Return Renewal</td>
<td>$194,314.00</td>
<td>D3040 - Distribution Systems - Steam Piping and Condensate Return</td>
</tr>
</tbody>
</table>
FCI Deeper Dive

- Making The Case
  - Maintain FCI
  - Improve to Target FCI
  - Specific Annual Funding
  - % of Replacement Value
Building a Budget
- Drill Down By Category
- Extract Specific Projects For Funding
- First Stages In “What-If” Planning

PREVENTIVE MAINTENANCE: Beyond Useful Life
Requirements by System

<table>
<thead>
<tr>
<th>System Types</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical/Electrical/Plumbing</td>
<td>$113,338,939</td>
</tr>
<tr>
<td>Finishes</td>
<td>$36,210,920</td>
</tr>
<tr>
<td>Structural/Envelope</td>
<td>$13,844,849</td>
</tr>
<tr>
<td>Furniture, Fixtures &amp; Equipment</td>
<td>$3,846,384</td>
</tr>
<tr>
<td>Special Construction</td>
<td>$807,111</td>
</tr>
<tr>
<td>Total</td>
<td>$167,048,203</td>
</tr>
</tbody>
</table>

$167 MM Identified Requirements
Beyond Useful Life
Budget Defense

- Data Makes The Case
- Subjectivity Dismissed
- “Wants” Undergo Additional Scrutiny
- Where to invest?

Data drives decision making
Needs Vs. “Wants”

- Respond to “Emergency” Requests
  - Safety is Priority One
  - Failures Will Happen, Budget For Them
  - What is a *REAL* Emergency?
- Recognize Value of Tradeoff B/W Needs and Wants
- Respond to “Social” Requests

Plan For The Unexpected, And Defend Your FCI Budget
Non-Technical Users

- Complex Topics, Simplified Message
- Variety in Expertise
- Value of Decision-Maker’s Time

PREVENTIVE MAINTENANCE: Requirements Breakdown
Top 20 Buildings

![Diagram showing Preventive Maintenance Requirements Breakdown]

- 190 Buildings (90% of inventory) totaling $70.7 MM
- Top 20 Buildings totaling $105.9 MM
- Total Identified Requirements: $177 MM

Boil, Boil, Boil Down The Story You Are Telling
Considerations

- What Can Be Done To Lower Operating Costs For These Facilities?
- How Can We Reduce Costs Without Capital Commitment?
- How Long Will These Facilities Operate Before Upgrades Can Be Funded?
Energy Conservation

Add an Energy Audit Component to the Assessment Program.

- Establish Energy Utilization Indices (EUI) for Each Facility. Expose the “Bad Actors”
- Focus on Operating Deficiencies in Buildings With Excessive EUI
- Develop and Evaluate Energy Conservation Measures (ECM) to Reduce Cost
- Implement Retro-Commissioning Activities to Eliminate Unnecessary Energy Losses

Score Your Building Energy Performance, Then Act
Field Assessment Teams
- Identify Operational Processes That Are Energy Intensive.
  - System Control Strategies
  - Physical Loss Windows
- Collect Specific Equipment Data on Energy-Consuming Equipment.

Desktop Analyses
- Analyze Building Characteristics
  - Collect and Analyze Utility Bills.
  - Evaluate Occupancies for Conditioned Space and Operational Classification
  - Calculate EUI and Compare to National Databases
  - Identify Candidates For Savings
Energy Conservation

Audit Reporting

- Document Energy Consumption Patterns and EUI Development.
- Rank Recommended ECMs Based on Initial Cost and ROI.
Energy Conservation

Retro-commissioning.

- Field-Intensive Evaluation of System Controls. Make Sure the Existing Systems are Operating as Intended.
- Assist Client Service Contractors in Identifying and Correcting Deficiencies.
- Train Client Personnel in Reducing Energy-Wasteful Activities and Processes (low-cost to no-cost ECMs).
- Measure Building Performance (optional).

Get The Most Out Of Your Buildings Energy Dollars
Planning Your Programs

- Consolidation of Space
- Discipline Specific Program
  - Pros
    - Likely to get supplier value
    - Simplifies assembly of design / procurement
  - Cons
    - Multiple “disturbances” to a facility
    - Priorities may not align with work packages

"For crying out loud, can't you see? I need more space!"

Plan Correctly to Maximize Dollars and Complete Priority Projects
Planning Your Programs

- Consolidated Packages Program
  - Pros
    - "Crossover" projects reduce operation disruption
    - Integrated project team will reduce “gaps” in design activities
  - Cons
    - May create larger per-building programs and reduce ability to touch more facilities
    - May force lower priority projects into completion out of convenience
Planning Your Programs

- Priority-Based Ranking Program
  - Pros
    - Completes projects in order of need
    - Cost of work easily identified
  - Cons
    - Priorities can affect multiple trades, making design and procurement difficult to organize
    - Likely that facility will receive multiple “touches” as next tier of priorities are accomplished

Plan Correctly to Maximize Dollars and Complete Priority Projects
Elements of Successful Programs

- Clearly Stated Objectives
- Executive Buy-In
- Tracking of Progress
- Tracking of Costs
- Contingency / Risk Planning

Be Clear, Be Organized, Show Progress, Be Accountable
Keeping Data Fresh

- Don’t Let Your Assessment Be a Coffee Table Book
- Reflects the Date of Assessment
- Integrate Ongoing Maintenance
- Integrate New Facilities
- Integrate New Needs That Arise (WOMS), Emergencies
- Integrate Accomplished FCA Work
Lessons-Learned

- Know The Basic Desired Outcome When Starting
- Define Granularity of Assessment
- Train End Users
- Commit To the Process/Program
- Assessors Must Be Trained Alike
- Use Professionals From Multi-Discipline Firm
- Understand That The Assessment is The Beginning-Choose a Team With Planning Experience

Choose Professionals and Define Intended Results
Lessons-Learned

- New Facilities Can Reduce M&O Cost
- Consider Recent Property Investments
- Decide If Site Deficiencies Also Count Against FCI
- Avoid The “Snowball Effect”
- Guard Against “Average FCI” Tunnel Vision

First Costs Can Lead to Long-Term Cost Savings
Recap

- Role of Facility Condition Assessment (FCA) in understanding “What do we own and what shape is it in?”
- Role of FCA in forecasting PM budgets
- Conflict between named Facility Condition Index (FCI) projects and “wants”
- Overcoming expectation of “Industry Standard” perception by leadership
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- Importance of keeping data fresh
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- Success and failures – lesson’s learned
Question & Answer

- How Should Cost Escalation Be Addressed?
- Does a FCA Capture Functional Obsolescence?
- Needs > Funding, Now What?
- What Level of Owner Staff Participation is Needed?
- How is “Uglied Out” Captured?
- Who Defines Priorities & Categories (Life Safety, Code, Currently Critical)?
- Software – Cloud or Hosted?
- Coke Vs. Pepsi

The Answer is “Yes, We’ve Been There And Done That”
JP Grom, AIA, LEED® AP, PMP 
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